

Headquarters U.S. Air Forces in

Europe

“Bring Europe Home”

USAFE CLEANUP PROGRAM UPDATE



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Overview

- **CLEANUP PROGRAM PHASES**
- **THE VALIDATION PROCESS**
- **CONCLUSIONS**



■ Identification of Suspected Contaminated Sites

■ Qualitative Threat Assessment/Review

- **Quantitative Human Health Risk Assessment**

■ Design and Remedial Action Project (s)



USAFE Cleanup Program Phases

- **PHASE I DISCO**
 - **Discovery (Identification) of Suspected (potentially) Contaminated Sites**
 - **CY 2003 ESTONIA CONFERENCE !**

- **PHASE II VALIDATION**
 - **Qualitative Threat Assessment/Review**
 - **Internal process**



PHASE II VALIDATION

- **ACTUAL and POTENTIAL**
 - **ENDANGERMENTS to HUMAN HEALTH and SAFETY and/or THE OVERALL OPERATIONS/MISSION at the INSTALLATION**
 - **CONSIDERING THE CURRENT/FUTURE USE OF RESOURCES and**
 - **OFF BASE RELEASES**
- **EXCELLENT SENIOR MANAGEMENT OVERSIGHT TOOL**
 - **PRIORITIZATION**
 - **DECISION -- ASSESS or CLOSE A SITE**
- **PERFECT COST SAVINGS INSTRUMENT**



THREAT versus RISK ASSESSMENT

QUALITATIVE

- IMMI THREAT
- THREAT TO HUMAN HEALTH/SAFETY
- REGULATIONS/POLICY
- THREAT TO MISSION
- RISK COMMUNICATION
- HOST NATION CONCERNS
- INTERNATIONAL AGREEMENT
- POLITICS

— Judgment

QUANTITATIVE

CONTAMINANT ASSESSMENT

- Source Analysis
- Background Levels

EXPOSURE ASSESSMENT

- Route of Entry
- Fate & Transport

TOXICITY ASSESSMENT

- Epidemiology
- Animal Toxicity

PHASE II



**Science (Risk
Assessment)
PHASE III**

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PHASE II VALIDATION

WHO DOES IT ?

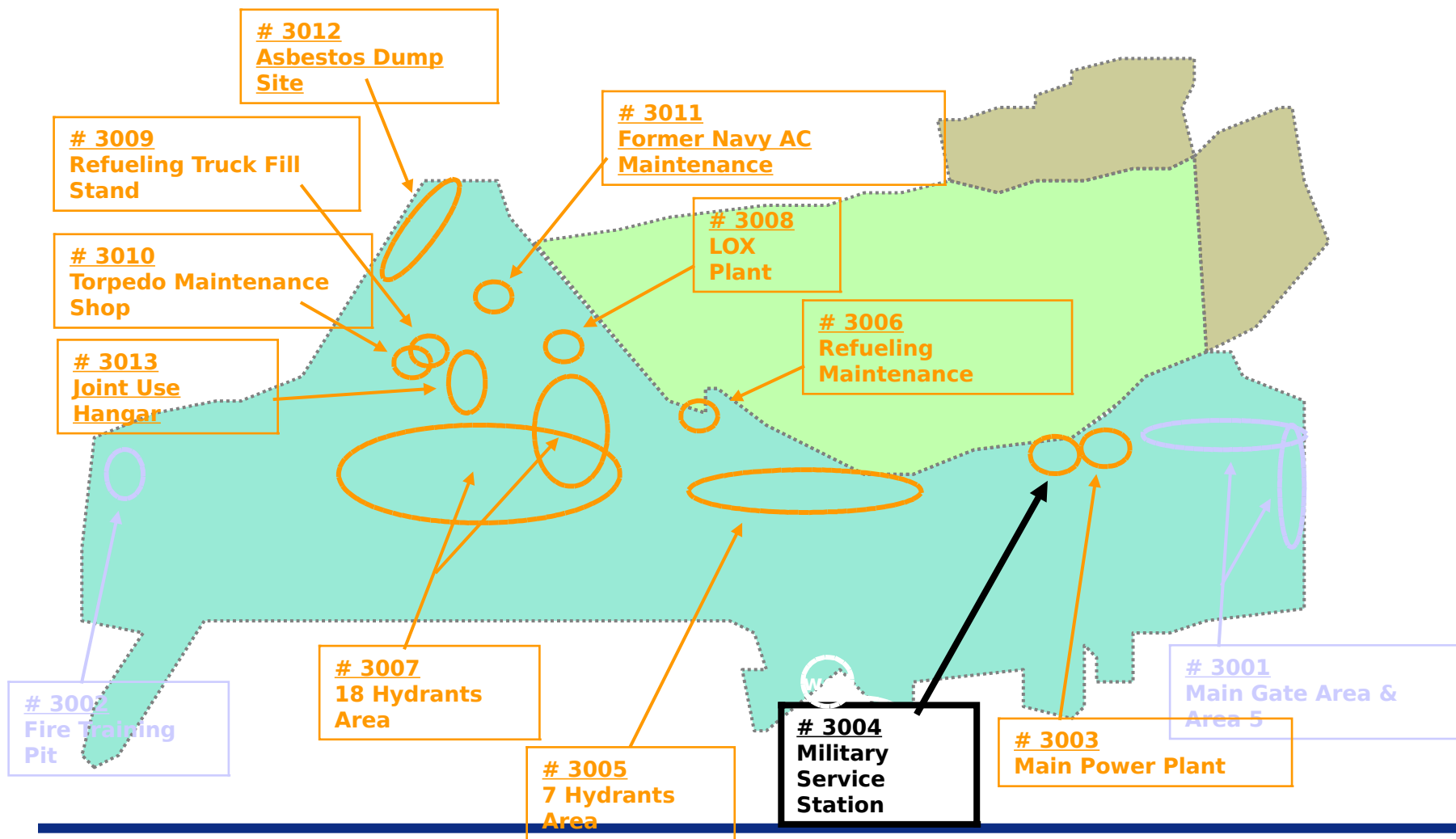
- **USUALLY the USAFE and INSTALLATION EXPERTS**
- **TODAY: YOU !!**

WHAT DO WE NEED ?

- **DISCO results and a site survey**
- **Experienced Engineers and Bioenvironmental Engineers**
- **Common Sense**



Contaminated & Suspected Contaminated Sites Map



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Contaminated Site Description

Site ID	Name/Title	Site Description
3004	Military Service Station	“There is strong potential for petroleum hydrocarbon (TPH), grease and chlorinated solvents (CHC) contamination in the area.” Spill and witness reports indicate existing soil pollution, possible surface pollution and potential groundwater pollution, there were two tank leaks at different mogas tanks in the past, recorded has been a loss of 3100gal (first tank leak in CY 84) and about 1900gal (second tank leak in CY 94), both tanks were replaced, surrounding soil was removed. There are still two old 10000gal capacity tanks in the ground (used since CY 78) and one waste oil tank with unknown condition/capacity. The tank bottoms are 3m below surface, no site assessment and no further soil or groundwater cleanup was done. Service Station is located close to fence line, small ditches lead to near creek (about 200m away) off base, clay type topsoil, sand stone with clefts expected in a depth of 4m and lower, groundwater table fluctuating between 2 and 4m depth, no monitoring well in area. Host nation (local) water supply wells located about 3km (2miles) downhill, no indication of pollution in past/recent sampling results, flow direction of groundwater not clear

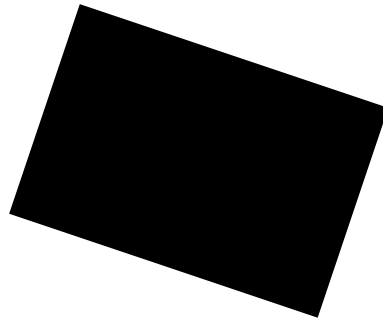
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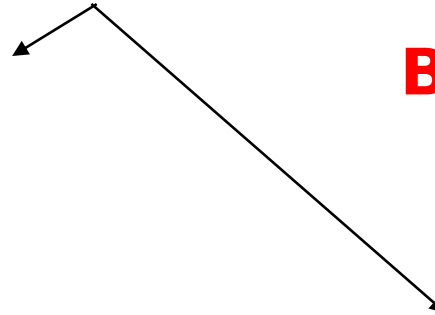
DISCO to VALIDATION

DISCO

- LOCATION/CONTAMINANTS



BLACK BOX



VALIDATION

- THREAT

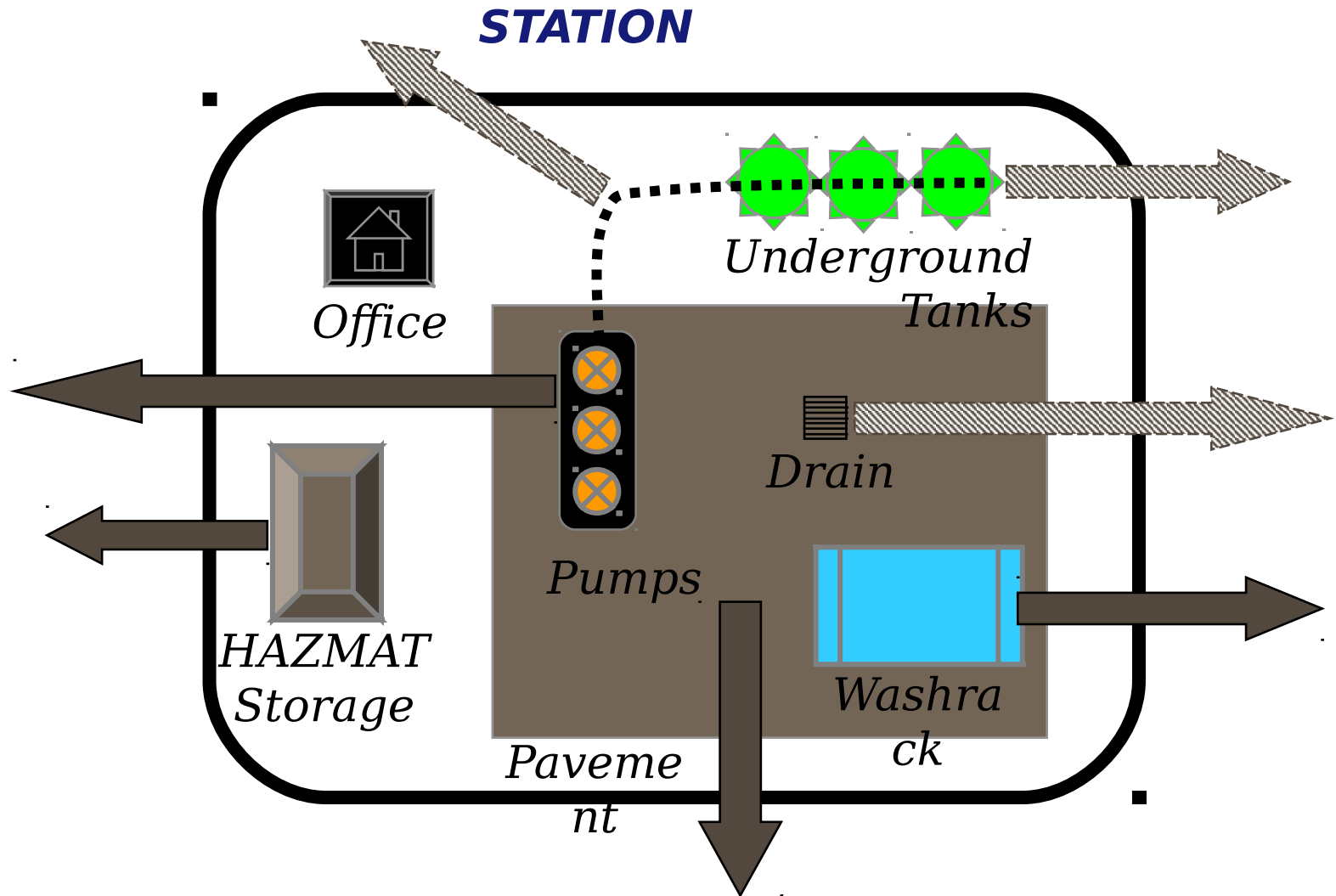


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SITE #3004 = BLACK BOX

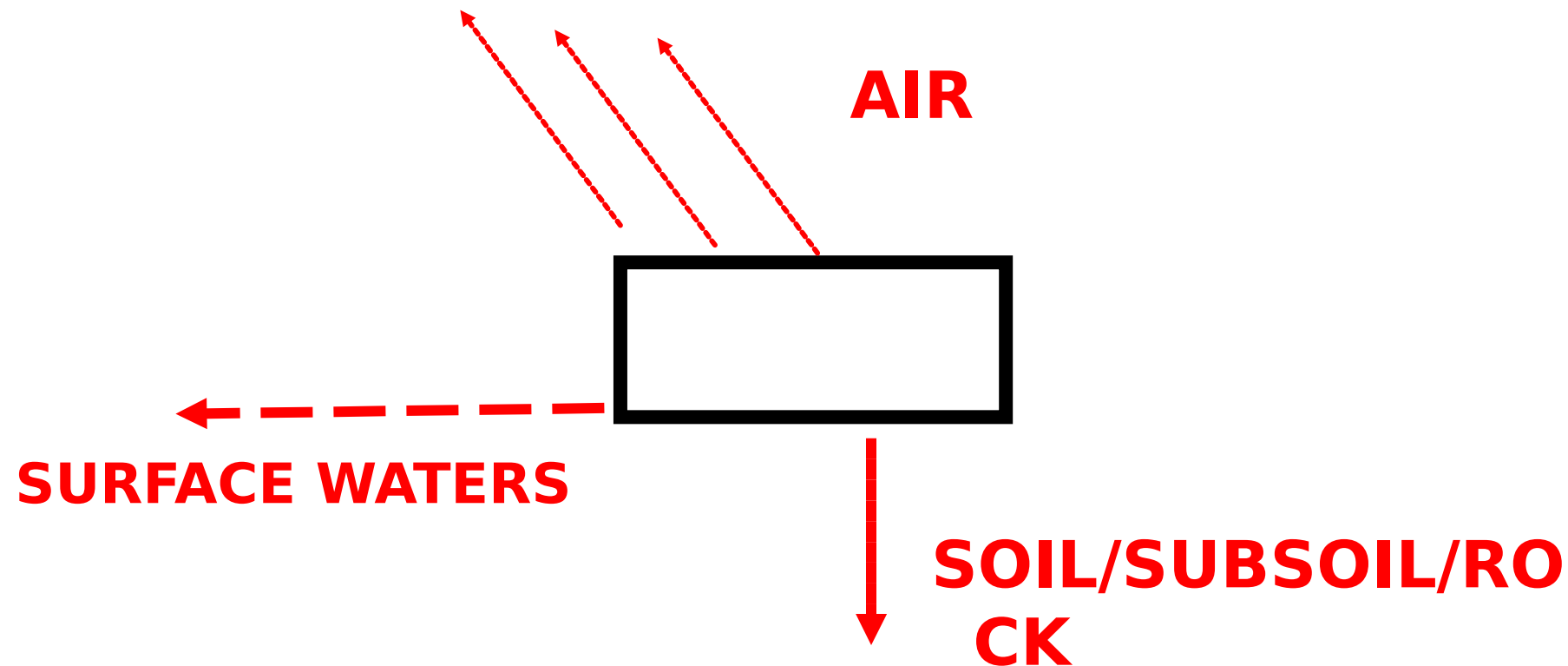
FUEL SERVICE



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VALIDATION PROCESS



**WHAT TYPE OF EMISSIONS DID OR COULD HAVE LEFT THE BOX
AND WHERE COULD THEY HAVE GONE TO OR WHERE ARE
THEY ?**

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VALIDATION PROCESS

- **INHOUSE TEAMWORK CE and SGPB**
- **LIMITED FIELDWORK AS REQUIRED**
- **THREAT ASSESSMENT WORKSHEET>**



USAFE THREAT ASSESSMENT

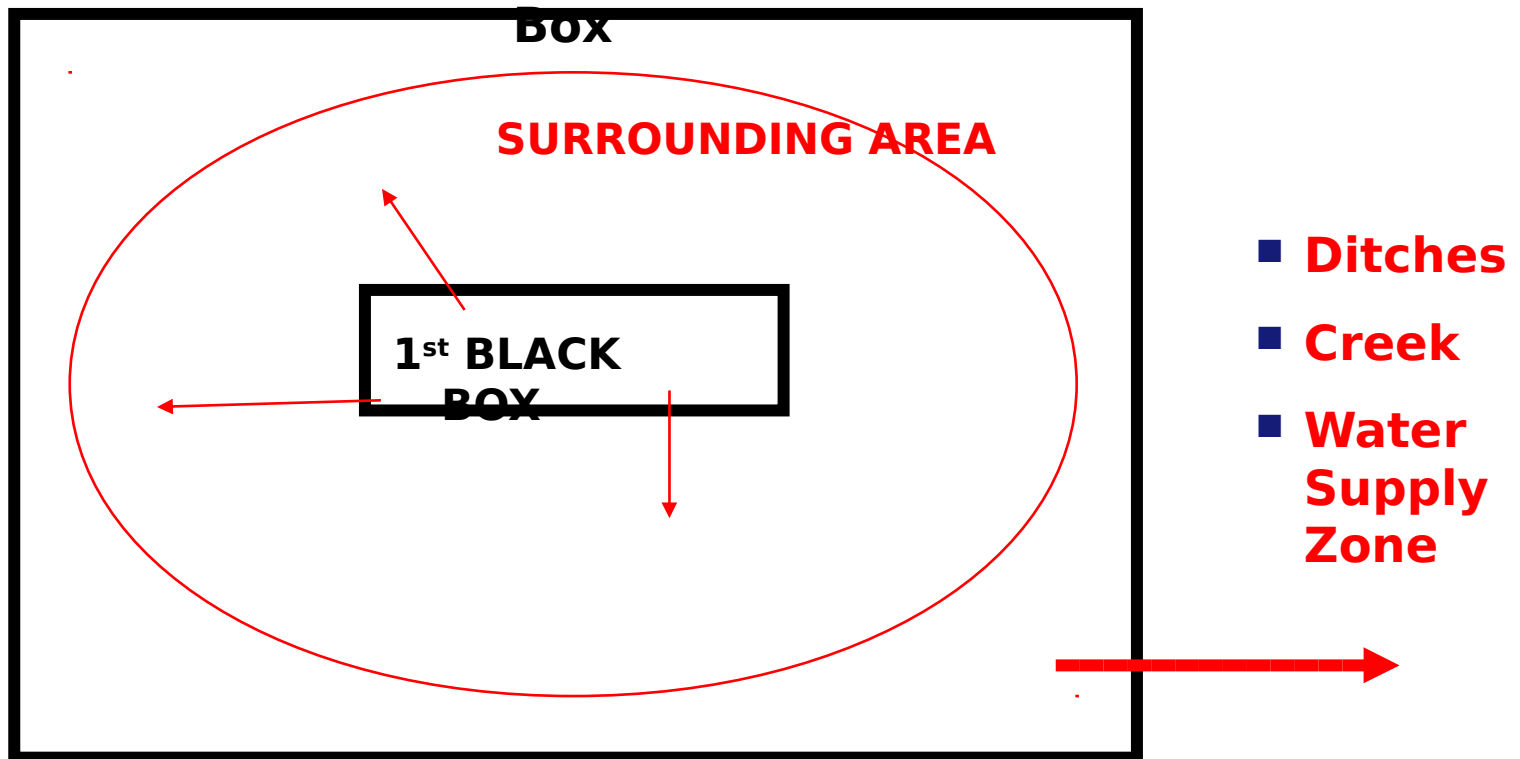
POTENTIAL THREAT → ENVIRONMENT CROSS SECTION ↓	Contaminants identified (At Site)	Impacted Medium (Type / Character)	Pathway Release Potential (Soil- Pathway- Groundwater)	Endangered Receptors (Direct/Indirect)	Threat
	N = None P = Potential K = Known		1 = Not Possible 2 = Potential 3 = Pollution Already Transferred 4 = Waste Stream	0 = No Receptors 1 = Human Health/Safety (D) 2 = Water Supply Zones (D) 3 = Groundwater (D/ID) 4 = Food Chain (ID) 5 = Others e.g. rivers, lakes, dry wells (ID)	0 = No Threat 1 = Low Threat 2 = Pot Threat 3 = Immi Threat 4 = Unknown Threat
Air -Exposures possible					
Surface Water -Toxicity -Spread -Accumulation					
Topsoil -Toxicity // -Permeability -Spread out character -Retention Capacity					
Subsoil/Rock -Toxicity // -Permeability -Spread out character -Retention Capacity					
Groundwater -Toxicity // -Spread -Mobility -Accumulation					

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VALIDATION PROCESS

Base Fence = 2nd Black



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USAFE THREAT ASSESSMENT

POTENTIAL THREAT → ENVIRONMENT CROSS SECTION ↓	Contaminants identified (At Site)	Impacted Medium (Type / Character)	Pathway Release Potential (Soil - Pathway - Groundwater)	Endangered Receptors (Direct/Indirect)	Threat
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Air -Exposures possible	P= TPH fumes	Air, open area	2 = limited	1 = limited possible	1 = open area
Surface Water -Toxicity -Spread -Accumulation	P= TPH/CHC Others ?	Ditches, surface drainage system	3 = spills obvious	5 = public creek, 600ft	1 - 2
Topsoil -Toxicity // -Permeability -Spread out character -Retention Capacity	K= TPH P= CHC Others ?	Clay, medium sand	3 = subsoil 4 = waste stream during, after excavation	1 = human health during disposal of polluted soil 4 = unauthorized dispos at agricultural land	2
Subsoil/Rock -Toxicity // -Permeability -Spread out character -Retention Capacity	P= TPH/CHC Others ?	Clay, weathered sandstone, red sandstone	2 = subsoil to sandstone and from sandstone cracks/clefts to further distance	2 = considering outside water protection zone 3 = is groundwater a public good ?	2 = strong potential threat due to near water supply zone
Groundwater -Toxicity // -Spread -Mobility -Accumulation	P= TPH/CHC Others ?	2-4m depth, seasonal fluctuation	2 = strong potential due to lost fuel amounts, vertical and horizontal spread and mobility possible	1 = human health via 2 local water supply and 3	2 = strong potential due to spilled fuel amounts (5000gal total)
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VALIDATION PROCESS

CONCLUSIONS

- **DETERMINES POTENTIAL THREATS**
- **SCOPES the MAGNITUDE of the CONTAMINATED SITE FOLLOW UP ACTION PROJECT**
- **ALLOWS A PRIORITIZATION BETWEEN IDENTIFIED CONTAMINATED SITES**
- **INHOUSE -- SAVES MONEY AND RESOURCES**
- **EXCELLENT MANAGEMET OVERSIGHT TOOL**
 - **WHERE ARE WE - WHAT IS NEXT !**

DECISION

- **RISK ASSESS THE SITE OR CLOSE THE SITE ?**



USAFE CLEANUP PROGRAM

NEXT STEP

RISK ASSESSMENT (PHASE III)



RISK ASSESSMENT SCOPE

FUTURE
PROJECT
SCOPE



**POTENTIAL PATHWAY
THREATS**

POTENTIAL THREAT → ENVIRONMENT ↓ CROSS SECTION	Contaminants	Impacted Medium	Pathway Release Potential	Endangered Receptors	Threat
Air					
Surface Water					
Topsoil					
Subsoil/Rock					
Groundwater					



**DRILLING/WELL
DEPTH**

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USAFE CLEANUP PROGRAM

QUESTIONS ?

